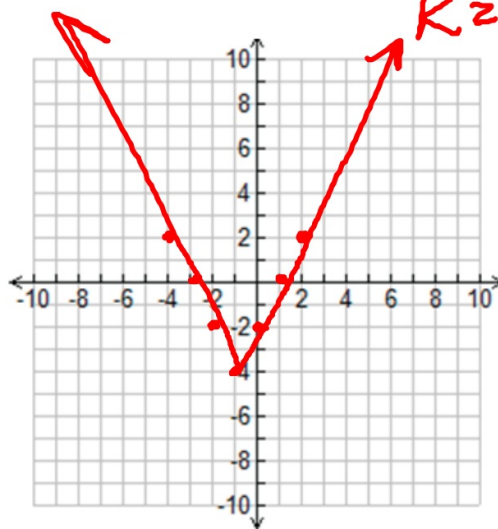


Bellwork 3/11/13:

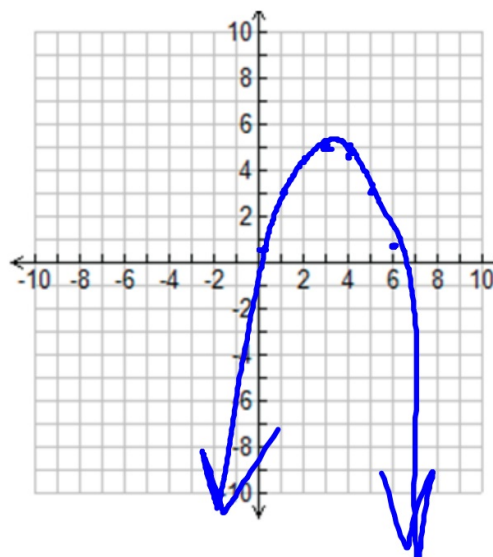
Graph the following functions:

1)  $y = 2|x+1| - 4$



$a = 2$   
 $h = -1$   
 $k = -4$

2)  $y = -1/2(x-3)^2 + 5$



$a = -1/2$   
 $h = 3$   
 $k = 5$

Page 1

## Section 5.9 - Graphing Cubics using Transformations

We are back to using a, h, k !!!

$$y = a(x-h)^3 + k$$

There is a big difference with graphing a cubic function - THE MOVEMENT IS NOT THE SAME ON BOTH SIDES!!

Page 2

Graph each cubic function:

$$y = x^3 \quad \downarrow \uparrow$$

$h, k$   
 $(0, 0)$

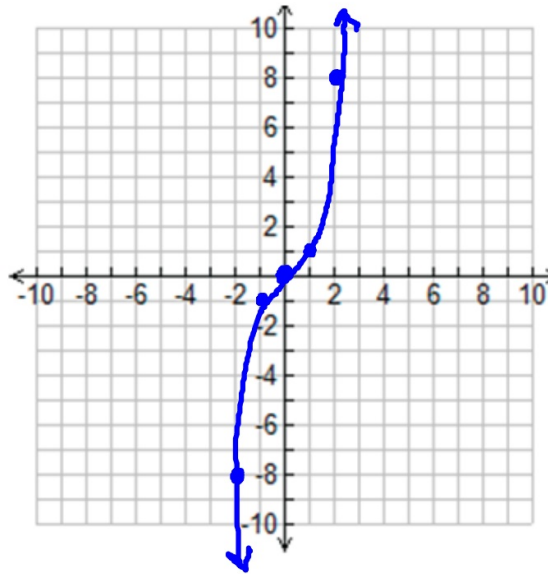
$$a = 1$$

right 1 up 1

left 1 down 1

right 2 up 8

left 2 down 8



example 2:

$$y = (x-3)^3$$

$h, k$   
 $(3, 0)$

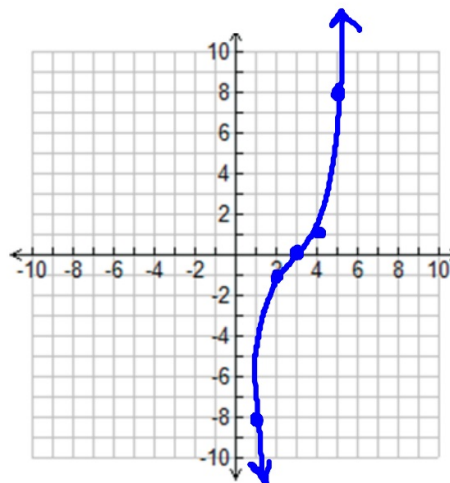
$$a = 1$$

→ 1 ↑ 1

← 1 ↓ 1

→ 2 ↑ 8

← 2 ↓ 8

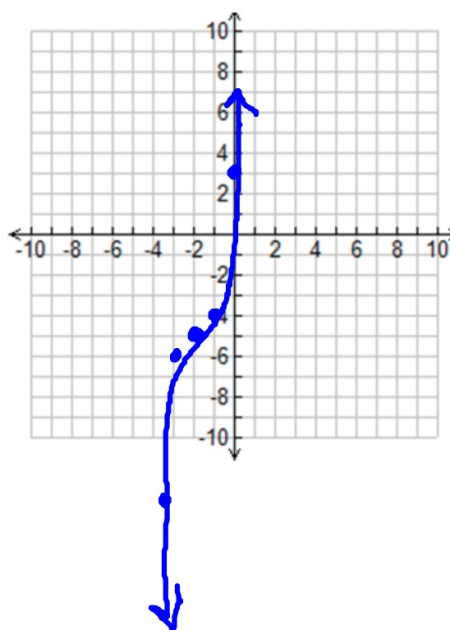


example 3:

$$y = (x+2)^3 - 5$$

$h, k$   
 $(-2, -5)$

$$a=1$$

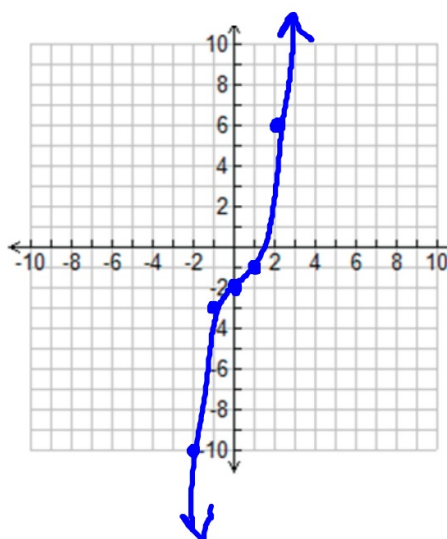


example 4:

$$y = x^3 - 2$$

$h, k$   
 $(0, -2)$

$$a=1$$



example 5:

$$y = 2x^3$$

$h, k$

$(0, 0)$

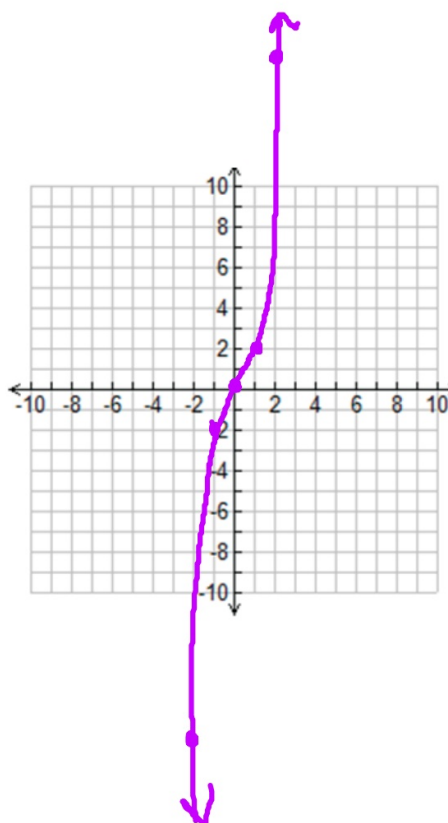
$a = 2$

right 1 up ~~2~~

left 1 down ~~2~~

right 2 up ~~8~~ 16

left 2 down ~~8~~ 16



example 6:

$$y = \frac{1}{2}x^3$$

$h, k$

$(0, 0)$

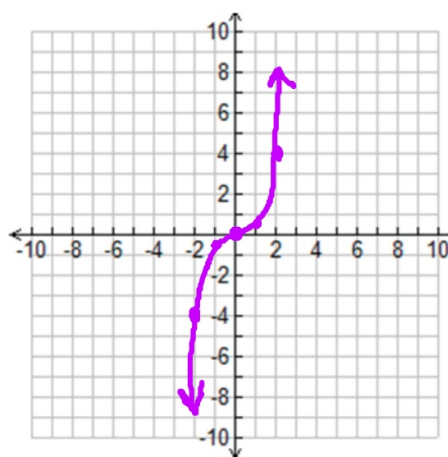
$a = \frac{1}{2}$

right 1 up ~~1~~  $\frac{1}{2}$

left 1 down ~~1~~  $\frac{1}{2}$

right 2 up ~~8~~ 4

left 2 down ~~8~~ 4



### example 7:

$$y = -x^3 \quad \uparrow \downarrow$$

$h, k$

$(0, 0)$

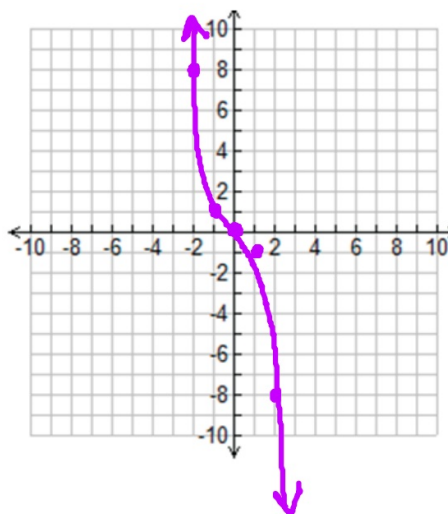
$a = -1$

right +1 ~~up 1~~ down 1

left +1 ~~down 1~~ up 1

right +2 ~~up 8~~ down 8

left +2 ~~down 8~~ up 8



### example 8:

$$y = -2(x-4)^3 + 5 \quad \uparrow \downarrow$$

$h, k$

$(4, 5)$

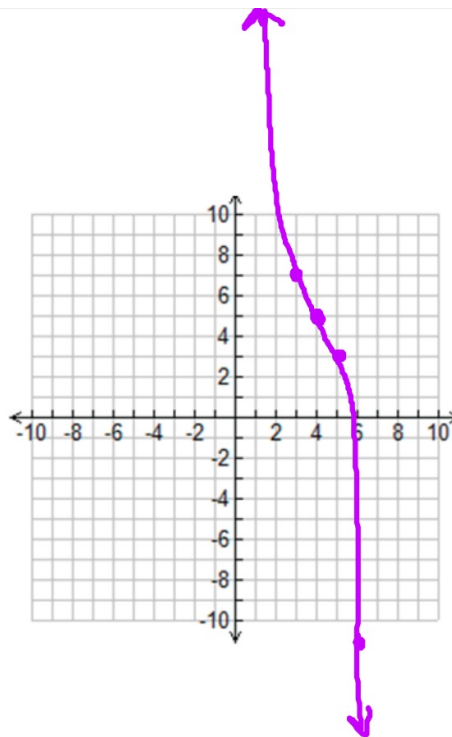
$a = -2$

right +1 ~~up 1~~ down 2

left +1 ~~down 1~~ up 2

right +2 ~~up 8~~ down 16

left +2 ~~down 8~~ up 16



**Homework:** Graphing Cubics Worksheet

